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13. ABSTRACT (Maximum 200 words) <p>This study seeks to discover whether the medically unexplained symptoms experienced by soldiers after combat is similar across the century.</p> <p>An extensive historical literature review has been undertaken of all published data on the subject and a standardised 'historical medical record' has been designed to gather information about soldier's personal history, military service, symptoms, pensions, medical investigations and diagnoses.</p> <p>We have computerised Public Record Office catalogues for the Boer War and First World War pension files which has enabled us to select two suitable diagnoses for each war and the generation of a random selection of cases. We have collected 200 cases of Disordered Action of the Heart (DAH) and 200 cases of psychogenic rheumatism from the Boer War (1899-1902) and 200 cases of DAH and 200 cases of neurasthenia and shell shock from the First World War. The first 600 cases of which have been entered onto our database.</p> <p>A detailed survey of the Second World War and subsequent archives has proved more time consuming than anticipated for reasons outwith our control.</p> <p>We believe however the complexity and high quality of the archived records made available to us will enable satisfactory conclusions to be drawn from this study.</p>				
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FOREWORD

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INTRODUCTION

This report summarises the research undertaken in the first year (9 February 1998 to 8 February 1999) of the study into war syndromes from 1900. The project was designed to answer two questions:

1. Are medically 'unexplained' symptoms experienced by soldiers after combat similar?
2. Are the morbidity and mortality rates of servicemen with post-combat syndromes greater than a control population of veterans with equivalent levels of physical disability?

To answer the first question, we will compare symptom patterns of a random sample of 200 servicemen who had served in the Boer War (1899-1902) and had been diagnosed as suffering from Disordered Action of the Heart (DAH) with a group of 200 DAH patients from the First World War (FWW) and 200 Effort Syndrome patients from the Second World War (SWW). These would, in turn, be compared with a random sample of cases diagnosed as suffering from the putative 'Gulf War Syndrome'.

To answer the second question, we will compare records from the FWW of 700 servicemen with the diagnosis of DAH and 700 soldiers who had sustained gunshot wounds (matched for the same level of pensionable disability). The death certificates of all 1,400 veterans will be examined to compare mortality rates.

The investigation over the last twelve months has fallen into three areas:

1. Literature review.

In order to refine our methodology for the investigation, the extensive literature on war syndromes and historical reports of unexplained disorders have been studied.

2. Creating a database.

The nature of the information to be collected for each serviceman has been reviewed and 'Historical Medical Record' sheets created to enable the collection of data in a standardised manner across the century. The storage of this data using Access has been carefully considered and in December 1998, a temporary data-entry clerk was recruited who, by the end of February 1999 had entered 600 subjects in the database.

3. Collection of data.

Work at the Public Record Office (PRO) on the Boer War and FWW files began in June 1998 and has continued to the present. The collection of data for the SWW from the Department of Social Security (DSS) archive started in November 1998 and is underway. Unfortunately, some problems remain in establishing the nature of the samples for the post-1939 period (see below).

BODY

Literature Review

The extensive literature on war syndromes has been reviewed and a select bibliography is contained in the references to this report. In addition, the major medical journals (notably the *Lancet*, *British Medical Journal*, *Proceedings of the Royal Society of Medicine* and *Journal of the American Medical Association*) have been hand searched for the period from the Boer War to the end of the Korean War to find papers relating to the psychology of war and particular war-related disorders. Specialist journals (including *Military Medicine*, *Journal of the Royal Army Medical Corps*, *American Journal of Psychiatry*, *Journal of Mental Science*, *British Journal of Psychiatry* and *Heart*) have been hand searched.

As well as medical papers, historical journals have also been reviewed. Official government reports and inquiries have been studied, including the Southborough Report of *The War Office Committee of Enquiry into 'Shell-Shock'*, London: HMSO (1922) and *Thomas Lewis Report upon soldiers returned as cases of Disordered Action of the Heart (D.A.H) or valvular disease of the heart (V.D.H.)*, London: Medical Research Committee (1917).

Design of the Database

The database has been set up using Access, which will allow statistical analysis using SPSS. Each individual case study is divided into seven parts:

1. Biographical details of the serviceman: date of birth and death (including cause of death where available), family history, occupation before and after service

2. Pension award: date, amount, diagnosis with changes, increments and reductions, and reason for ending
3. Military record: nature of service (regular, conscript, volunteer), unit, rank, date of enlistment, date of discharge, dates of service abroad, time in combat, wounds suffered and any other traumatic experiences.
4. Symptom list divided into the following sub-groups: fatigue, cognition, cardiovascular and respiratory, gastro-intestinal, genito-urinary, central nervous system, locomotor system, eye, ear, nose and throat, skin, psychological state, sleep problems, other features (including temperature, appetite, weight changes and self-inflicted wounds).
5. The results of medical investigations
6. The explanations of the servicemen themselves are recorded together with the comments of the various physicians who examined them.
7. The soldier's military assessment with a summary of any offences committed.

Collection of Data

Work gathering data from the historical pension files of veterans held at the PRO began in June 1998 and was divided between two holdings: PIN71 which relates to soldiers who served in the Boer War, and PIN26 which relates solely to the FWW. Dr Edgar Jones worked on PIN 71, while the two research assistants, Helen McCartney and Denise Poynter have researched PIN26, which comprises over 20,000 individual pension files catalogued by name of the recipient. It was necessary to put the listing on to a database in order to sort them by diagnosis. Once this had been achieved, two samples (one for DAH and one for neurasthenia and shell shock) of 200 cases were extracted using random numbers. As at 8 February 1999, 602 cases (38 per cent) of the 1,600 needed for the

historical element of the investigation have been studied.

In order to permit a series of intra-war comparisons, it was decided to examine two disorders for each conflict, rather than the one proposed in the original study. Additional funds have been requested to broaden the investigation in this way and to enable study of soldiers gassed and the effects on nurses. We await confirmation that these have been awarded.

The research has been undertaken as follows:

Researcher	E. Jones	D. Poynter	H. McCartney
Early Wars ~ India, Egypt, Afghanistan, Sudan (PRO, PIN71)			
Soldier's/Irritable Heart	5		
Total: 5			
Boer War (PRO, PIN71)			
Disordered Action of the Heart	97 (1)		
Rheumatism	68		
Total: 165			
First World War (PRO, PIN26)			
Disordered Action of the Heart	50 (5)		121 (13)
Neurasthenia (Shell Shock)		198 (24)	
Total 369			
Second World War (DSS, Nelson)			
Effort Syndrome	3	2	4
Psycho-neurosis		33 (20)	21 (23)
Total: 63			

Total number examined to date: 602

Note: figures in brackets indicate those files rejected because of insufficient information or because they did not meet the study's criteria.

DIFFICULTIES ENCOUNTERED WITH THE ARCHIVES AND DATA.

The principle difficulties encountered concern the archival records, which can only be understood by detailed study. They relate mainly to the Boer, Second and Korean War records whose complexity has been revealed as the research has progressed. Many of the records had to be catalogued before they could be used as random sample. In addition, the pension files relating to the SWW and the Korean War are closed to public inspection as the recipients or their dependants are still alive. Some delays were encountered in the necessarily detailed negotiation with the DSS to ensure confidentiality in handling these records and the anonymity of individuals in our report. Ministerial approval was sought and granted.

The Boer War

While the historical pension files at the Public Record Office have proved remarkably full and informative, those (PIN71) that relate to the Boer War are not catalogued by diagnosis. It is not therefore possible to extract a random sample of 200 cases without examining each of the 6,300 files to discover the diagnosis. This has made the extraction of data a very time consuming process. A sample has been obtained by calculating the number of pensioners by surname for each letter of the alphabet. Records are then randomly selected according to these proportions. Because the DAH cases are more numerous than those with rheumatism, this involves examining every record in each alphabetical group. The lower numbers for rheumatism will probably result in the 200 cases being the entire population rather than a random sample. An analysis of PIN71 files suggests that it may represent an 'unweeded' collection and that they may not be a random

two per cent sample as in the case of PIN26. (All records sent to the PRO are subject to this random 2% sampling before preparation for release).

The Second World War (SWW) and Korean War

The second major difficulty concerns the extraction of the random sample of cases for the SWW and Korean conflict. Pension files relating to these wars remained closed to public inspection and are held by the Department of Social Security (DSS). After lengthy negotiations, ministerial permission was obtained to gather data from these in August 1998 and work began on the extraction in November. However, it was soon discovered that the very large archive is not only uncatalogued but also extremely complex. The DSS has co-operated fully with the research but because we are unable to pay for additional staff, the extraction of records has proved time-consuming. This work has to be performed by DSS staff in addition to their normal duties, at no cost to the project.

The records are stored at two sites in Lancashire: Nelson for closed files (that is where the pensioner has died) and Heywood for later closed and live files. They are further sub-divided between the three services and between officers and other ranks. All officers files from 1939 to the present are at Nelson, and total 17,000. The other ranks files at Nelson are divided into two groups: those that applied between 1939 and 1942 and which were assessed on a regional basis (133,500 files), and those that applied between 1942 and 1945 and were assessed centrally (300,000 files). The central files are further divided into two groups: M2 and M6. The M2 series continues chronologically from the old regional centres and covers the years 1943 to 1945. The M6 series was created in 1945 to deal with servicemen released

(rather than discharged) from the forces at the end of the war. These soldiers were released because of their length of service, because their skills were urgently needed in industry or on compassionate grounds. This series was discontinued in 1950 and files relating to the period 1943-50 were subject to a 'cull' in which all files not active since 1959 were destroyed, a process halted by Parliament. Our audit suggests that the destruction may not have been as thorough as first thought. In addition, it is estimated that there are a further 420,500 closed files and 250,000 live files held at Heywood which relate to all conflicts from the SWW to the present. The live files are catalogued by National Insurance number and their details recorded on a computer database. We have requested two analyses: one of all files by diagnosis from 1938 to 1950 and a second from 1950 to 1960. The Heywood files are currently being surveyed as there is no catalogue recording diagnosis. Every #1 and #51 Army file has been requested to find out the particular conflict and disorder to which they relate. This exercise has yielded a total of 2,000 files.

It was not possible to predict that the DSS archive would require surveying before random samples could be extracted, neither was the complexity of the holding fully appreciated. Our survey work has taken two research assistants seven weeks to complete. Of necessity this work has to be performed on site and their travel and subsistence costs (at economy rates) to date is £5,250 (c\$7000) i.e. c\$1000 per week. The five visits to Lancashire to supervise and take part in the surveying made by Dr Jones has cost £800.

THE MORTALITY STUDY

Following completion of phase I of the study, we will move to the mortality study. As originally planned, the intention is to compare 700 cases of DAH (that is an additional 500 from the symptom study) and to contrast them with 700 lower limb amputees. Our experience with the archives to date reveals a potential problem in that the PRO catalogues do not allow either easy identification of amputees in any great numbers, or simple matching of the level of disability in each group. DAH pensioners generally received an award of 20 to 30 per cent and rarely in excess of 50 per cent, whilst an amputee was paid 50 to 100 per cent depending on the severity of the disablement. Accordingly, it is proposed to extract a random selection of pensioners with gunshot wounds adjusted to match the mean level of disability in the DAH cases. The problem here is, once more, the way in which the archive is catalogued, for example it is impossible to assess the level of disability awarded from the PRO catalogue entry, the result of which is that large numbers of files will have to be called up. This is labour intensive and will have either a financial or time cost unless we are able to negotiate a 'bulk order' from the PRO. It may be possible to undertake much of this in Lancashire on a large holding of uncatalogued FWW pension files awaiting destruction, but as before, they too need to be surveyed first so a proportion can be included in the main symptom study. It is estimated that the extraction and surveying of these files could take between 4-6 weeks. It is difficult at present to estimate the full cost implications of these archival problems.

CONCLUSION

The symptom-comparison research remains on course for completion within the three-year schedule. However a five-month extension is needed to increase the number of diagnoses studied per conflict and to undertake subsidiary FWW study into the symptoms of soldiers subjected to gas attacks and the effects of war on women (nurses).

The archives are a rich and complex source of information that we believe will allow satisfactory conclusions to be drawn about post-conflict syndromes.

We have been fortunate in the survival of very detailed and complete records for the Boer War which have enabled us to select two diagnoses (DAH and psychogenic rheumatism) for examination. Furthermore, these records also include small numbers of pensioners who served in even earlier conflicts, one having been found from the Indian Mutiny of 1857! Data has been collected for two diagnoses (DAH and neurasthenia or shell shock) for the FWW. A few cases may need to be replaced where the loss of part of the file has led to insufficient information. The data collection for 1914-18 is largely completed.

The collection of cases for the SWW and Korean campaign has been hampered by the complex nature of the pension files. These are not catalogued and are stored on two sites under two different systems. As a result, it was necessary to survey the entire holding before proceeding to a random selection. This eventuality was not foreseen and has necessitated a number of visits to Nelson and Heywood in Lancashire that were not included in the travel budget. This survey is now almost complete and we will soon be in a position to make a random selection of

two diagnoses for the SWW ('psycho-neurosis' and Effort Syndrome) and a single diagnosis for the Korean War ('psycho-neurosis'). We hope that it will also prove possible to include 200 cases of 'psycho-neurosis' from the campaign in Malaya (from June 1948).

REFERENCES

- Anonymous, Neurasthenia in a Russian Naval Officer.
Lancet (1906). **1**: (4 March):609
- Anonymous, Neuroses of Military Men after a Campaign.
Lancet (1907). **1**: (22 June):1740
- Anonymous, *Report of the Army Medical Department*, London:
HMSO, 1912.
- Anonymous, *Report of the War Office Committee of Enquiry
into 'Shell-Shock'*. (London, HMSO, 1922)
- Addison, A. Calder, *Time to Kill, The Soldier's
Experience of War in the West 1939-1945*,
London: Pimlico, 1997.
- R.H. Ahrenfeldt, *Psychiatry in the British Army in the
Second World War*, London: Routledge & Kegan
Paul, 1958.
- R.J. Arthur, Reflections on military psychiatry.
American Journal of Psychiatry (1978). **135**:
(Supplement):2-7.
- K.L. Artiss, *Combat psychiatry: from history to theory*.
Military Medicine (1997). **162**: (9):605-609.
- A. Babbington, *Shell-Shock, A History of the Changing
Attitudes to War Neurosis*, London: Leo Cooper,
1997.
- A.B. Blackburn, *Review of the Effects of Agent Orange: A
Psychiatric Perspective on the Controversy*.
Military Medicine (1983). **148**: 333-340.
- F.W. Blaisdell, *Medical Advances during the Civil War*.
Archives of Surgery (1988). **123**: 1045-1050.

- E. Blunden, *Undertones of War* [1928] Harmondsworth: Penguin Books, 1937.
- E. Bogacz, War neurosis and cultural change in England, 1914-22: the work of the War Office Committee of Enquiry into 'Shell-Shock'. *Journal of Contemporary History* (1989). **24**: 227-256.
- E.W. Boland, W.P. Corr, Psychogenic Rheumatism. *Journal of the American Medical Association* (1943). **123**: (13):805-809.
- E.W. Boland, Psychogenic rheumatism: the musculoskeletal expression of psychoneurosis. *Annals of Rheumatic Diseases* (1947). **6**: 195-203.
- J. Bourke, *Dismembering the Male, Men's Bodies, Britain and the Great War*, London: Reaktion Books, 1996.
- M. Brown, *The Imperial War Museum Book of the Somme*, London: Sidgwick & Jackson, 1996.
- A.G. Butler, *The Australian Army Medical Services in the War of 1914-1918*, Canberra: Australian War Memorial, 1943.
- N. Cantlie, Impressions of a visit to Korea and Japan. *British Medical Journal* (1952). **2**: 1253-1255.
- Lord Carver, Morale in battle - the medical and the military. *Journal of the Royal Society of Medicine* (1989). **82**: 67-71.
- J.M. Clark, *The Costs of the World War to the American People*, New Have: Yale University Press, 1931.
- M.E. Cohen, F. Consolazio, R.E. Johnson, Blood lactate response during moderate exercise in

- neurocirculatory asthenia, anxiety neurosis or effort syndrome. *ICI* (1947). **26**: 339-342.
- M.E. Cohen, P.D. White, Neurocirculatory asthenia: 1972 concept. *Military Medicine* (1972).142-144.
- R. Cooter, M. Harrison, S. Sturdy, *War, Medicine and Modernity*, Thrupp: Sutton Publishing, 1998.
- E. Coplans, Some Observations on Neurasthenia and Shell-shock. *Lancet* (1931). **2**: (31 October):960
- J. Cotton, I.E. Neary, *The Korean War in History*, Manchester: Manchester University Press, 1989.
- F.A.E. Crew, *History of the Second World War, United Kingdom Medical Series, The Army Medical Services, Campaigns, Volume 1*, London: HMSO, 1954.
- M. Culpin, *Psychoneuroses of War and Peace*, Cambridge: Cambridge University Press, 1920.
- M. Culpin, A criticism of modern trends in the treatment of psychoneurosis. *Medical Press* (1952).71-73.
- A. Cumming, P.B. Maxwell, P.S. Laing, *Report upon the State of the Hospitals of the British Army in the Crimea and Scutari*, London, 1855.
- J.M. Da Costa, On Irritable Heart. *American Journal of Medical Science* (1871). **61**: 17-52.
- E.T. Dean, *Shook over Hell, Post-Traumatic Stress, Vietnam and the Civil War*, Cambridge, Massachusetts: Harvard University Press, 1997.
- S.R. Drew, *Commissioned Medical Officers in the Medical Services of the British Army 1660-1960*,

London: Wellcome Historical Medical Library,
1968.

E.T. Devine, L. Brandt, *Preliminary Economic Studies of the War, Disabled Soldiers and Sailors Pensions and Training*, New York: Oxford University Press, 1919.

A. Farrar-Hockley, *The British Part in the Korean War, Volume 1, A Distant Obligation* London: HMSO, 1990.

A. Farrar-Hockley, *The British Part in the Korean War, Volume 2, An Honourable Discharge*, London: HMSO, 1995.

N. Fenton, *Shell Shock and its aftermath*, St Louis: C.V. Mosby, 1926.

C. Feudtner, 'Minds the dead have ravished': Shell shock history, and the ecology of disease-systems. *History of Science* (1993). **31**: 377-420.

M.I. Finucane, General Nervous Shock, Immediate and Remote, after Gunshot and Shell Injuries in the South African Campaign. *Lancet* (1900). **2**: (15 September):807-809.

J.J. Flood, Psychiatric Casualties in U.K. Elements of Korean Force. *Journal of the Royal Army Medical Corps* (1954). **100**: 40-47.

A.J. Glass, Psychotherapy in the combat zone. *American Journal of Psychiatry* (1954). **110**: 725-731.

T.R. Glynn, The Traumatic Neuroses. *Lancet* (1910). **2**: (5 November):1332-1336.

- R.T. Grant, Observations on the after-histories of men suffering from the effort syndrome. *Heart* (1926). **12**: 121-142.
- R. Graves, *Goodbye to All That* [1929], Harmondsworth: Penguin Books, 1960.
- A. Gregory, *The Silence of Memory, Armistice Day 1919-1946*, Oxford: Berg, 1994.
- J. Halliday, B. Cumings, *Korea, The Unknown War, An Illustrated History*, London: Viking, 1988.
- H.E. Hanson, R.F. Goldman, Cold injury in man: a review of its etiology and discussion of its prediction. *Military Medicine* (1964). **134**: 1307-1316.
- T. Harrison, D. Clarke, The Northfield Experiments. *British Journal of Psychiatry* (1992). **160**: 698-708.
- D. Hart Dyke, War and its effects on people. *King George's Fund for Sailors Review* (1990). 114-116.
- K.C. Hyams, K. Hanson, F.S. Wignall, J. Escamilla, E.C. Oldfield, The impact of infectious diseases on the health of US troops deployed to the Persian Gulf during operations Desert Shield and Desert Storm. *Clinical Infectious Diseases* (1995). **20**: (1):1497-1504.
- K.C. Hyams, F.S. Wignall, R. Roswell, War Syndromes and Their Evaluation: From the U.S. Civil War to the Persian Gulf War. *Annals of Internal Medicine* (1996). **125**: (5):398-405.

- K.C. Hyams, R.H. Roswell, Resolving the Gulf War syndrome question. *American Journal of Epidemiology* (1998). **148**: (4):339-342.
- M.W. Ireland, *The Medical Department of the United States Army in the World War, Volume XIV, Medical Aspects of Gas Warfare*, Washington: Government Printing Office, 1926.
- M. Jones, *Social Psychiatry, A Study of Therapeutic Communities*, London: Tavistock Publications, 1952.
- S.C. Joseph, A comprehensive clinical evaluation of 20,000 Persian Gulf War veterans. *Military Medicine* (1997). **162**: (3):149-155.
- J. Keegan, *The Face of Battle, A Study of Agincourt, Waterloo and the Somme*, London: Jonathan Cape, 1976.
- D. Knox, *The Korean War, Uncertain Victory, An Oral History*, San Diego: Harcourt Brace Jovanovich, 1988.
- W. Langdon Brown, Hunterian Tradition in Cardiac Research. *Lancet* (1917). **1**: (24 February):291-294.
- A.P. Latcham, *Journey's End: ex-servicemen and the state during and after the Great War*. (1997). Oxford University: D.Phil.
- S.A. Levine, The Origin of the term Neurocirculatory Asthenia. *New England Journal of Medicine* (1965). **273**: 604-605.
- C. Lewis, *Sagittarius Rising [1936]*, Harmondsworth: Penguin Books, 1977.

- T. Lewis, Report on Neuro-circulatory Asthenia and its Management. *The Military Surgeon* (1918). 42: (2112):409-426.
- T. Lewis, Report upon soldiers returned as cases of 'disordered action of the heart' (D.A.H.) or 'valvular disease of the heart' (V.D.H.) (Medical Research Committee, London, 1917).
- T. Lewis, *The Soldier's Heart and the Effort Syndrome* (Shaw & Sons, London, 1918).
- C. MacDonald, *Britain and the Korean War*, Oxford: Basil Blackwell, 1990.
- L. Macdonald, *The Roses of No Man's Land*, London: Michael Joseph, 1980.
- J. Mackenzie, The Soldier's Heart. *British Medical Journal* (1916). 1: (22 January):117-119.
- W.C. MacLean, Diseases of the Heart in the British Army, The Cause and the Remedy. *British Medical Journal* (1867). 1: (16 February):161-164.
- S.A. Macphail, *Official History of the Canadian Forces in the Great War 1914-19, The Medical Services*, Ottawa: F.A. Acland, 1925.
- W.G. Macpherson, *The Russo-Japanese War, Medical and Sanitary Reports from Officers attached to the Japanese and Russian forces in the field*, London: HMSO, 1908.
- G.I. Malcolm, *The Argylls in Korea*, London: Thomas Nelson & Sons, 1952.
- A. Marwick, *The Deluge, British Society and the First World War*, London: Macmillan, 1965.

- D.C. McMurtrie, *The Evolution of National Systems of Vocational Re-education for Disabled Soldiers and Sailors*, Washington: Government Printing Office, 1918.
- H. McPhail, *Portrait of Wilfrid Owen, Poet and Soldier, 1893-1918*, Petersfield: Gliddon Books, 1993.
- T.J. Mitchell and G.M. Smith, *Medical Services, Casualties and Medical Statistics of the Great War*, London: The Imperial War Museum, 1931.
- C.A. Morris, Some War Sequelae. *Lancet* (1901). 2: (7 December):1559-1564.
- F.W. Mott, The Effects of High Explosives upon the Central Nervous System. *Lancet* (1916). 1: (12 February):331-338.
- F.W. Mott, *War Neuroses and Shell Shock*, London: Henry Frowde and Hodder & Stoughton, 1919.
- C.S. Myers, A Contribution to the Study of Shell Shock. *Lancet* (1915). 1: (13 February):316-320.
- C.S. Myers, *Shell Shock in France 1914-18, Based on a War Diary*, Cambridge: Cambridge University Press, 1940.
- R.A. Newman, Combat Fatigue: A Review of the Korean Conflict. *Military Medicine* (1964). 129: 921-928.
- P.G.F. Nixon, An appraisal of Thomas Lewis's effort syndrome. *Quarterly Journal of Medicine* (1995). 88: 741-747.
- B.S. Oppenheimer, Neurocirculatory Asthenia and related problems in Military Medicine. *Bulletin of the*

New York Academy of Medicine (1942). **18**: 367-382.

S.P. Orr, R.K. Pitman, N.B. Lasko, L.R. Herz,
Psychophysiological assessment of posttraumatic
stress disorder imagery in World War II and
Korean combat veterans. *Journal of Abnormal
Psychology* (1993). **102**: (1):152-159.

J.W. Osborne, J. Cowen, Psychiatric factors in
peripheral vasoneuropathy after chilling.
Lancet (1945). **2**: 204-206.

H. Palmer, Forward Psychiatry in the Army. *Proceedings
of the Royal Society of Medicine* (1945). **39**:
137-143.

J.D. Paulett, Low back pain. *Lancet* (1947). **2**: (23
August 1947):272-276.

Persian Gulf Veterans Coordinating Board, Unexplained
illnesses among Desert Storm veterans. *Archives
of Internal Medicine* (1995). **155**: 262-268.

R. Phillipson, Army Psychiatry 1948-1958. *Journal of the
Royal Army Medical Corps* (1958). **104**: 151-154.

D. Richter, *Chemical soldiers, British Gas Warfare in
World War 1*, London: Leo Cooper, 1992.

M. Rolicka, New studies disputing allegations of
bacteriological warfare during the Korean War.
Military Medicine (1995). **160**: (3):97-100.

G. Rosen, Nostalgia: a 'forgotten' psychological
disorder. *Psychological Medicine* (1975). **5**:
340-354.

- S.D. Rosen, J.C. King, J.B. Wilkinson, P.G.F. Nixon, Is chronic fatigue syndrome synonymous with effort syndrome? *Journal of the Royal Society of Medicine* (1990). **83**: 761-764.
- J.B. Sampson, Anxiety as a Factor in the Incidence of Combat Cold Injury. *Military Medicine* (1984). **149**: 89-91.
- W. Sargant, *The Unquiet Mind, The Autobiography of a Physician in Psychological Medicine*, London: Heinemann, 1967.
- S. Sassoon, *The Complete Memoirs of George Sherston*, London: Faber and Faber, 1937.
- W. Sherren, *The Rights of the Ex-Service Man and Woman*, London: L.J. Gooding, 1921.
- E. Showalter, *Hystories, Hysterical Epidemics and Modern Culture*, London: Picador, 1997.
- G.E. Smith, T.H. Pear, *Shell Shock and its Lessons*, Manchester: Manchester University Press, 1917.
- D. Stafford-Clark, Morale and flying experience: results of a wartime study. *Journal of Mental Science* (1949). **95**: 10-50.
- C. Stanford Read, *Military Psychiatry in Peace and War* London: H.K. Lewis & Co., 1920.
- J.W. Stokes, L.E. Banderet, Psychological aspects of chemical defense and warfare. *Military Psychology* (1997). **9**: (4):395-415.
- M. Stone, Shellshock and the psychologists in *The Anatomy of Madness, Essays in the History of Psychiatry, Vol. II, Institutions and Society*,

- W.F. Bynum, R. Porter and M. Shepherd, Eds.,
London: Tavistock Publications, 1985, p. 242.
- J.E. Talbott, Soldiers, Psychiatrists, and Combat Trauma. *Journal of Interdisciplinary History* (1997). 27: (3):437-454.
- S. Taylor, K. Kuch, W.J. Koch, D.J. Crockett, G. Passey, The structure of posttraumatic stress symptoms. *Journal of Abnormal Psychology* (1998). 107: (1):154-160.
- J.A. Venning, The Etiology of Disordered Action of the Heart, A Report on 7,803 Cases. *British Medical Journal* (1919). 2: (13 September):337-339.
- S.R.E. Ward, *The War Generation, Veterans of the First World War*, Port Washington, N.Y.: Kennikat Press, 1975.
- J.C. Watts, Cold Injury in Korea. *Journal of the Royal Army Medical Corps* (1952). 98: (6):1-7.
- E.O. Wheeler, P.D. White, E.W. Reed, M.O. Cohen, Neurocirculatory asthenia (anxiety neurosis, effort syndrome, neurasthenia). *Journal of the American Medical Association* (1950). 25: (3):878-889.
- R.M. Wilson, The Irritable Heart of Soldiers. *British Medical Journal* (1916). 1: (22 January):119-120.
- W.D. Wilson, *Report on the Medical Arrangements in the South African War*, London: HMSO, 1904.
- P. Wood, Da Costa's Syndrome (or Effort Syndrome). *British Medical Journal* (1941). 1: (24 May):767-772.

- P. Wood, Da Costa's Syndrome (or Effort Syndrome), The Mechanism of the Somatic Manifestations. *British Medical Journal* (1941). 1: (31 May):805-811.
- P. Wood, Aetiology of Da Costa's Syndrome. *British Medical Journal* (1941). 1: (845):845-851.
- C.F. Wooley, Where are the diseases of yesteryear? Da Costa's syndrome, soldier's heart, neurocirculatory asthenia - and the mitral valve prolapse syndrome. *Circulation* (1976). 53: 749-751.
- C.F. Wooley, From Irritable Heart to Mitral Valve Prolapse: The Osler Connection. *American Journal of Cardiology* (1984). 53: 870-874.
- C.F. Wooley, From Irritable Heart to Mitral Valve Prolapse: British Army Medical Reports, 1860-1870. *American Journal of Cardiology* (1985). 55: 1107-1109.
- C.F. Wooley, From Irritable Heart to Mitral Valve Prolapse: World War 1, the British Experience and James Mackenzie. *American Journal of Cardiology* (1986). 57: 463-466.
- C.F. Wooley, From Irritable Heart to Mitral Valve Prolapse - World War 1, the British Experience and Thomas Lewis. *American Journal of Cardiology* (1986). 58: 844-849.
- A. Young, *The Harmony of Illusions, Inventing Post-Traumatic Stress Disorder*, Princeton, New Jersey: Princeton University Press, 1995.